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STATISTICAL BULLETIN
Metropolitan Life Insurance Co.

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TYPHOID FEVER—A VANISHING DISEASE.

Typhoid fever is rapidly disappearing from the records of American mortality. This is indicated by the very convincing evidence offered by the Journal of the American Medical Association in its ninth annual survey of typhoid fever. The survey relates to the sixty-eight cities of the United States with a population of more than 100,000. These cities in 1920 had a population of twenty-seven and one-third millions and there occurred in that year a total of 1,007 deaths from typhoid fever. This is equivalent to a rate of 3.7 deaths per 100,000 of population. For fifty-seven of these sixty-eight cities, figures are available for the full eleven years, 1910 to 1920. In 1910, the typhoid fever rate was 19.6 per 100,000; in 1920, the same group of cities had a rate of 3.5, or about one-sixth as high. This shows how rapidly this disease has declined during the decade. The picture is even more encouraging if we concentrate upon the largest cities, namely, those having 500,000 and more of population. There are twelve such cities, and their death rate for typhoid in 1920 was only 2.8 per 100,000. The City of New York, with its nearly six millions of population, had a rate of 2.4; and Chicago, one of 1.1 per 100,000.

How great has been the victory of sanitary science in its attack upon typhoid is also indicated by reference to the mortality records of the Census Bureau for the early years of this century. Rates of over 50 per 100,000 were of frequent occurrence. In 1900, one state (Indiana) out of the ten original registration states, and seven cities of 100,000 population or over out of 37 such cities, had typhoid fever rates of more than 50 per 100,000. Indeed, rates of over 100 were not infrequently registered. During the first ten years of the century such high rates were recorded, however, more often in the smaller than in the larger cities of the country.

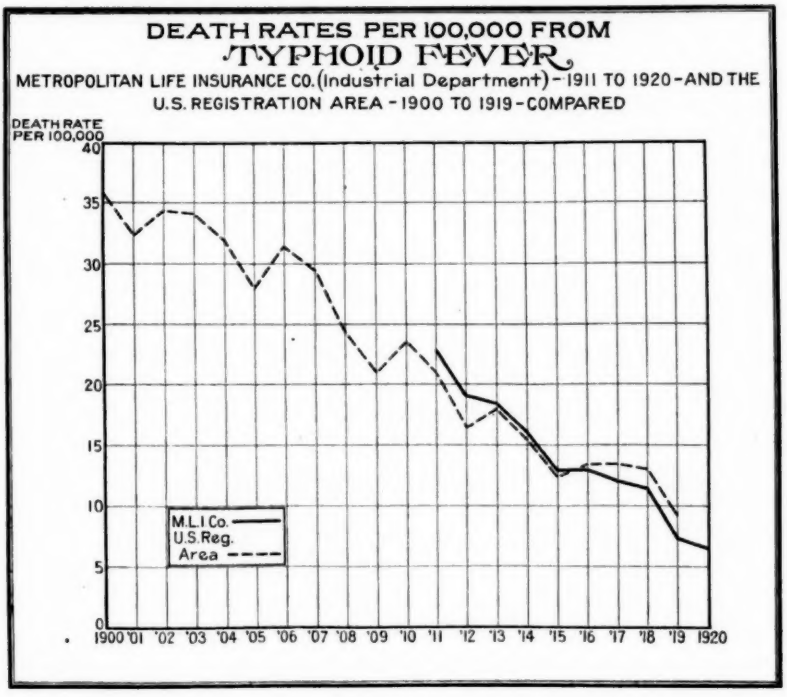
Much interest attaches to an added comparison of the typhoid rates in the twelve cities of more than 500,000 population as quoted in the Journal's survey. The greatest drop is shown for Pittsburgh. For the five-year period 1906 to 1910, the annual average death rate for this city was 65.0 per 100,000. The rate for 1920 was 2.7. During the same time, the mortality in Philadelphia dropped from 41.7 to 3.3; the decline in Baltimore was from 35.1 to 4.7; and in San Francisco from 27.3 to 3.1. The other decreases mentioned were: Chicago from 15.8 to 1.1; Boston from 16.0 to 1.5; New York from 13.5 to 2.4; Los Angeles from 19.0 to 2.6; St. Louis from 14.7 to 2.7; Cleveland from 15.7 to 3.2; Detroit from 21.1 to 5.1 and Buffalo from 22.8 to 5.1. Examination of the typhoid death rates quoted in the Journal of the American Medical Association for the year 1920, in the 68 large cities, discloses not a single instance in which a rate of even 15 per 100,000 was reached, instead of the 50 per 100,000 which was, as we have said, not uncommon twenty years ago.

Equally good evidence of the rapid disappearance of typhoid fever is offered by the statistics of the Industrial Department of the Metropolitan Life Insurance Company. The Industrial policy-holders of this Company reside, for the most part, in the cities of the United States and Canada. In 1911, their death rate for typhoid fever was 22.8 per 100,000. In 1920, it was 6.5, representing a reduction of 72 per cent. As in the general population of the sixty-eight large cities of the country, the experience of the Metropolitan shows the most pronounced declines in 1919 and 1920. The tendency to decline is more accentuated now than it was at the beginning of the decade. The present indication is also that there will be a greater decline in 1921, than occured in 1920. For the first three months of this year, the death rate among Industrial policy-holders was 28 per cent. lower than for the corresponding period of 1920.

The remarkable drop in the typhoid fever rate is the result of many causes which have operated in recent years. Probably of greatest importance has been the continued improvement in the quality of the water supply of American cities. In more recent years, the extensive inoculations against typhoid fever in the Army and Navy have undoubtedly had a very good effect. This is indicated by the much greater drop in the death rate among men than among women and, more especially among men at the ages of 20 to 35. Metropolitan policy-holders have, in addition, enjoyed nursing care during sickness and have received instruction through public health literature. Millions of pamphlets on typhoid fever have been distributed by the Company, emphasizing the outstanding

facts in the causation and prevention of this disease. Vaccination against typhoid fever has been uniformly urged. These facts may well explain the greater drop in the death rate among the insured than in the general population.

The history of typhoid fever is a remarkable example of what may be accomplished if all the forces of the community are concentrated upon the control of a disease, when the facts of its causation and method of control are known. The history of typhoid fever can be repeated in relation to the other acute infections.


DEATH RATES PER 100,000 FROM
TYPHOID FEVER
METROPOLITAN LIFE INSURANCE CO. (Industrial Department) - 1911 TO 1920 - AND THE U.S. REGISTRATION AREA - 1900 TO 1919 - COMPARED
DEATH RATE PER 100,000
40
35
30
25
20
15
10
5
0
M.L.I Co.
U.S. Reg. Area
1900 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 1920

DIPHTHERIA PREVAILS IN VIRULENT FORM.

One of the few unfavorable features in a health situation that is generally excellent, is the heavy mortality throughout the country from diphtheria. This disease reached epidemic prevalence during the last few months of 1919 and the first part of 1920. At that time, communities were urged not to slacken their efforts against diphtheria and to develop a vigorous campaign against the disease. The more general use of the Schick test for the recognition of susceptibles and the early and more extensive use of anti-toxin was recommended. There is, however, little improvement in the diph-

theria situation. The rate rose sharply last October and in November and December still further increases were registered. A high diphtheria rate has prevailed during the winter of 1920–1921. Among Metropolitan Industrial policy-holders, the rate for 1921, to date, remains unusually high. Health officers are again urged to use all possible means to bring about the more general use of the Schick test and to promote the practice of giving immunizing toxin-antitoxin inoculations.

EFFECT OF BRIGHT'S DISEASE IN SHORTENING THE LIFE SPAN OF INSURED WAGE-EARNERS.

Bright's disease is a degenerative condition which affects primarily middle life and old age. Its incidence as a cause of death increases regularly with age. We rarely think of this disease in terms of the damage done in early life. But by a certain method of analysis, we can readily see how great are its inroads upon the prospective longevity of individuals of every age. By the method of the life table we can determine how many years of the expected after-life span are lost at each year of age from birth onward. Thus, we find that the loss of expectation of life for the average individual from Bright's disease is, at birth, one and one-quarter years for both white males and females, and slightly more than one year for colored males and females. This means that if Bright's disease were entirely eliminated throughout life, there would be added to the average life span of each individual from one year to a year and one-quarter. This loss increases until the maximum is reached in middle life. Among whites the maximum loss is about a year and one-half, and among the colored it is in excess of that, reaching among colored males one and three-quarter years at about age forty-five. Even at sixty-five years there is a loss of about a year in the average life span from Bright's disease. It is clear, therefore, that while this disease is most prevalent at later ages, it has an effect throughout life in shortening the prospect for a full after lifetime.

The following table shows the loss in expectation of life at selected ages among Industrial policy-holders of the Metropolitan Life Insurance Company.

Number of Years in Average After-Lifetime Lost on Account of Bright's Disease.

Metropolitan Life Insurance Company—Industrial Department 1911 to 1916.

Age	White		Colored	
	Male	Female	Male	Female
0	1.25	1.25	1.15	1.00
1	1.41	1.38	1.38	1.19
2	1.45	1.41	1.45	1.25
3	1.47	1.42	1.47	1.27
4	1.48	1.43	1.47	1.28
5	1.47	1.45	1.47	1.30
15	1.49	1.46	1.52	1.36
25	1.52	1.48	1.63	1.46
35	1.52	1.44	1.75	1.51
45	1.44	1.32	1.76	1.44
55	1.28	1.12	1.64	1.25
65	1.00	.84	1.40	1.01
75	.73	.56	1.13	.74
85	.60	.37	.89	.50
95	.32	.16	.08	.14

The losses from Bright's disease are still large but it has been amply proved that they can be materially reduced. Thus, in the experience of the Metropolitan policy-holders there has been a reduction since 1916 of 30 per cent. in the death rate. In 1920, the death rate had so far declined that there were actually 3400 fewer deaths than if the 1911 rate had continued to prevail. When life tables for 1920 are prepared and the effect of the individual diseases upon the life expectation is computed, it will be found that the loss from Bright's disease is lower than the figures given in the above table for the years 1911 to 1916.

The campaign for personal hygiene, for physical education in schools, for the diminished use of alcoholic beverages and for the removal of focal infections has apparently already produced results, and it is very likely that the effects will become cumulative in later years. It is very clear indeed that damage to the kidneys need not occur so frequently as it does and also that where renal impairment exists, the life and habits of persons can be so arranged that death may be postponed for a very considerable time. Primarily, more insistence must be made upon more careful personal hygiene and wider extension of periodical medical examinations.

SOME STATISTICS ON WIDOWS AND THEIR CHILDREN.

Numerous state and municipal governments have, in recent years, attempted to provide for dependent widows with young children by establishing some form of pension fund. The theory has been that such children are the wards of the state and that the cost of their care is more than justified by maintaining wholesome family life for mothers and their young children. The value of such efforts will depend chiefly upon the adequacy of the provisions made and these, in turn, will be conditioned by the completeness of the knowledge of the extent of family damage created by the death of married wage earners. Very little information is, in fact, available on this important subject. Appropriations have been made upon the merest estimates and later found far from sufficient to meet the true requirements. The records of the claim payments of the Metropolitan Life Insurance Company lend themselves admirably to furnishing this type of information and we have attempted to gather a few basic facts which can be used in determining the probable costs of such pension plans. For the purposes of this study, 1,845 death claims paid in October and November, 1920, on the lives of white married males insured in the Industrial Department of the Company were studied.

Table 1 shows the distribution by ages of the widows left by the deceased policy-holders:

TABLE 1.

Distribution of Ages of Widows With and Without Children.

Age of Widows, in Years	Total Widows	Per Cent.	Number of Widows with		
			No Children	One or More Children Under 16 Years	All Children 16 Years and Over
All Ages	1,845	100.0	389	631	825
Under 20	19	1.0	7	12	...
20 to 24	59	3.2	19	40	...
25 to 29	136	7.4	43	93	...
30 to 34	136	7.4	27	109	...
35 to 39	160	8.7	34	115	11
40 to 44	183	9.9	50	97	36
45 to 54	467	25.3	88	142	237
55 to 64	413	22.4	75	22	316
65 and over	272	14.7	46	1	225

Of these 1,845 widows, 19 per cent. were under 35 years of age and, among this group, all the children left were under 16 years of

age. The largest number of widows was in the age period 45 to 54, and more than 60 per cent. of the total were under age 55. Even up to this age of the mothers, a large number of the children was still under working age.

Of the 1,845 widows, 389, or 21 per cent. had no children; 631, or about one-third had one or more children under 16 years of age and 825, or 45 per cent. had children all of whom were 16 years of age and over. The families with children over 16 exclusively do not present an important economic problem and require no further discussion. We have, therefore, limited our consideration to those widows having one or more children under 16. The following table shows the composition of the families of these 631 widows:

TABLE 2.

Composition of 631 Families, Consisting of Widows and Children Under 16 Years of Age.

Number of Children Under 16 Years of Age in Family	Families with Specified Number of Children 16 Years of Age and Over										Total Families with Children Under 16 Years	Per Cent. of Total
	0	1	2	3	4	5	6	7	8	9		
1	148	20	25	19	17	9	5	4	1	2	250	39.6
2	114	20	19	18	8	2	2	...	...	...	183	29.0
3	59	6	11	3	4	3	1	1	...	...	88	13.9
4	29	7	2	4	5	...	...	...	...	...	47	7.4
5	27	3	3	2	1	...	...	1	...	...	37	5.9
6	14	2	1	1	1	...	...	...	...	...	19	3.0
7	4	1	...	1	...	...	...	...	...	...	6	1.0
8	1	...	...	...	...	...	...	...	...	...	1	.2
Total families with children over 16 years.....	396	59	61	48	36	14	8	6	1	2	631	100.0

These 631 widows had a total of 2,072 children. Of these, 1,417 children were under 16 years old, or 2.2 children under working age per widow. Close to 40 per cent. of the widows had only one child under 16 and nearly 69 per cent. had either one or two children. An additional 14 per cent. had three children under 16. It is an interesting fact that figures for New Zealand for 1917, compiled in a similar manner, give almost identical results for the distribution of the children under working age for such widows. These figures indicate how serious is the problem that confronts the large numbers of widows who are left with children by the death of the industrial wage earner.

In order to value any pension plan for widows and minor children, it is necessary to have the age distribution of the children as well as of the mothers. The following table gives the facts:

TABLE 3.

Distribution by Ages of the Children of 631 Widows With One or More Children Under 16 Years of Age.

Ages of Children	Number	Per Cent.
Total Children	2,072	....
16 years and over	655	....
Under 16 years	1,417	100.0
Under 5 years	367	25.9
5 to 9	446	31.5
10 to 14	472	33.3
15 to 16	101	7.1
Not specified, but under 16	31	2.2

More than one-fourth of the total children under 16 are less than 5 years of age, and over 57 per cent. of them are under 10 years.

Tuberculosis, with 130 deaths, or 21 per cent. of the total, still stands far ahead of any other single cause as a destroyer of families and producer of widows and young orphans. Second to tuberculosis, are deaths due to accidental causes; these number 89, or 14 per cent. of the total. It is important to note here that 16 of these deaths were due to automobile accidents, and that 20 of the fatal accidents were occupational in character. Cancer and organic diseases of the heart contributed each 8 per cent. of the total deaths. Together, these four causes were responsible for more than half the deaths of wage-earners.

The foregoing data show how serious is the damage done by the death of a father with minor children. They will serve community officials who are contemplating the establishment of widows' funds. But, aside from these considerations, they bring home clearly the preventable causes of the dependency that accompanies the deaths of wage-earners. Deaths from tuberculosis and from accidents are preventable and those from other causes can, in many instances, through the cooperation of the local health agencies, be postponed until the children are older and better able to care for themselves. We have in these figures another and very powerful argument for public health work. A diminution in the damage created by the deaths of wage-earners is indicated as an economic necessity, apart from the important consideration of the welfare of thousands of young children who are annually thrown upon the community as public wards.

HEALTH RECORD OF MARCH, 1921.

The third month of the year marked the continuation of the extremely low death rate that has prevailed since the early spring of 1920. The rate for the month, 10.2 per 1,000, was slightly higher than for February (9.4), but this rise was a seasonal one. The mortality during the month was 34 per cent. lower than for March, 1920. The rate for the first quarter was not only much below that of last year but was the lowest recorded in the experience of the Company for the first three months of any year.

As in preceding months, the very low mortality rates for tuberculosis and pneumonia continue to be the outstanding features of the record, and are largely responsible for the low totals. With that part of the year passed in which the highest mortality from tuberculosis ordinarily occurs, the death rate for 1921, to date, is actually lower than the tuberculosis rate for the whole year of 1920. This would be very remarkable even if the comparison were made with a normal year; it is all the more so since 1920 itself was a record year for tuberculosis. Unless unexpected developments occur later in the year, the tuberculosis death rate for 1921 will register a new minimum for this disease. In like manner, a new minimum rate for pneumonia may be expected in 1921.

The winter has passed with no sign of the reappearance generally of epidemic influenza. This fact is especially significant because of the many predictions which have been made that we might expect a recurrence at about this time, in view of the periodicity of this disease in past years.

The less favorable features of the health situation are the continued high rates for diphtheria, scarlet fever, puerperal conditions and automobile accidents. For the first two there was a little improvement in March, as compared with February. The death rate for puerperal conditions, however, rose rather sharply. A total of 276 deaths were reported with a rate of 24.3 per 100,000, as compared with 21.4 in February and 17.5 in January.

There has been an improvement in the homicide record, the February rate of 5.6 having declined to 4.9.

Eighty-four lives of policy-holders were lost in automobile accidents during the month with a rate of 7.4 per 100,000. This is high for this time of the year. On the basis of the mortality during the first quarter, a new maximum rate for this cause of death may be expected for 1921. During the winter of the present year the rate has been much higher than for the corresponding period of last year. Unless there shall be a pronounced change for the better, an in-

creased toll of human life, and more especially child life, will be charged to automobile fatalities.

The death rate in the general population of the large cities of the country in March was the same as for the preceding month, namely, 13.8 per 100,000 population. Compared with March, 1920, there was a decrease of 3.1.

There has been an improvement in the smallpox situation, but several outbreaks were reported. The disease was rarely of a virulent type and very few deaths were reported. In West New York, New Jersey, the total number of cases up to March 30th reached thirty. The focus was one well defined case. The town was placed under strict quarantine by the New Jersey State Board of Health. Several cases of smallpox have been reported from Baltimore and from Toledo and the disease has also appeared in Centralia, Kankakee and Evanston, Illinois. In Chicago, the Health Department reports that more people have been vaccinated against smallpox within the last three months than in any similar period for twenty years. The business men of the city have cooperated heartily to bring this about. In Detroit, smallpox cases during the first week of March reached the maximum since last July. The Health Department is vaccinating from 500 to 1,000 people daily.

Diphtheria has been reported in large numbers in Chicago with more deaths than in the corresponding weeks of 1920. In New York City, the Schick test is being given on an increasing scale. In Detroit, there has been a decided falling off in diphtheria cases.

There is no indication of any country-wide recrudescence of influenza in epidemic prevalence. The disease has shown quite an increase in New York City, 101 cases being reported during the first week in March and 165 during the last week, but the deaths were few.

From January 1st up to March 23d, 308 cases of lethargic encephalitis with 85 deaths had been reported in New York City. On April 2d, two cases of this disease were reported in Hillsdale, New Jersey.

A review of foreign reports show that focal areas of typhus fever have appeared in Slovakia and Ruthenia. Influenza has been epidemic among the American troops on the Rhine. No deaths had occurred up to March 22d, however.

Smallpox in epidemic and virulent form is reported from Haiti. Information dated February 15th is to the effect that there had been 2,874 cases with 221 fatalities at Port au Prince from the beginning of the outbreak, September 22, 1920, to February 11, 1921. Bubonic plague has appeared in Peru; during the first two weeks of February 38 cases with 14 deaths were reported.

Alastrim is again raging in Jamaica—particularly in the country parishes. No deaths have been reported.

The following table presents a statement of the mortality data for the months of February and March, 1921 and for the whole year 1920.

METROPOLITAN LIFE INSURANCE COMPANY.

Death Rates per 100,000 for Principal Causes, Premium-paying Business in Industrial Department.

MONTHS OF FEBRUARY AND MARCH, 1921.

CAUSE OF DEATH	RATE PER 100,000 LIVES EXPOSED		
	Mar., 1921	Feb., 1921	Year 1920
TOTAL—ALL CAUSES	1015.0	936.2	968.4
Typhoid fever	3.1	4.0	6.5
Measles	5.9	4.3	8.3
Scarlet fever	9.5	10.1	5.9
Whooping cough	6.2	5.7	6.5
Diphtheria	24.4	27.3	21.6
Influenza	17.1	12.7	52.3
Tuberculosis (all forms)	133.9	122.7	135.0
Cancer	73.0	65.7	68.3
Meningitis (all forms)	6.4	5.2	5.1
Cerebral hemorrhage	68.1	62.2	60.1
Organic diseases of heart	139.9	126.8	114.6
Pneumonia (all forms)	120.9	106.7	103.9
Other respiratory diseases	17.8	17.0	17.8
Diarrhea and enteritis	8.8	10.3	15.5
Bright's disease	74.2	74.8	69.4
Puerperal state	24.3	21.4	22.5
Suicides	6.1	7.4	6.0
Homicides	4.9	5.6	5.7
Other external causes (excluding suicides and homicides)	44.7	46.0	58.1
Traumatism by automobile	7.4	6.8	10.9
All other causes	225.7	200.1	185.3

Correspondence on the subjects discussed in these BULLETINS may be addressed to the Editor:

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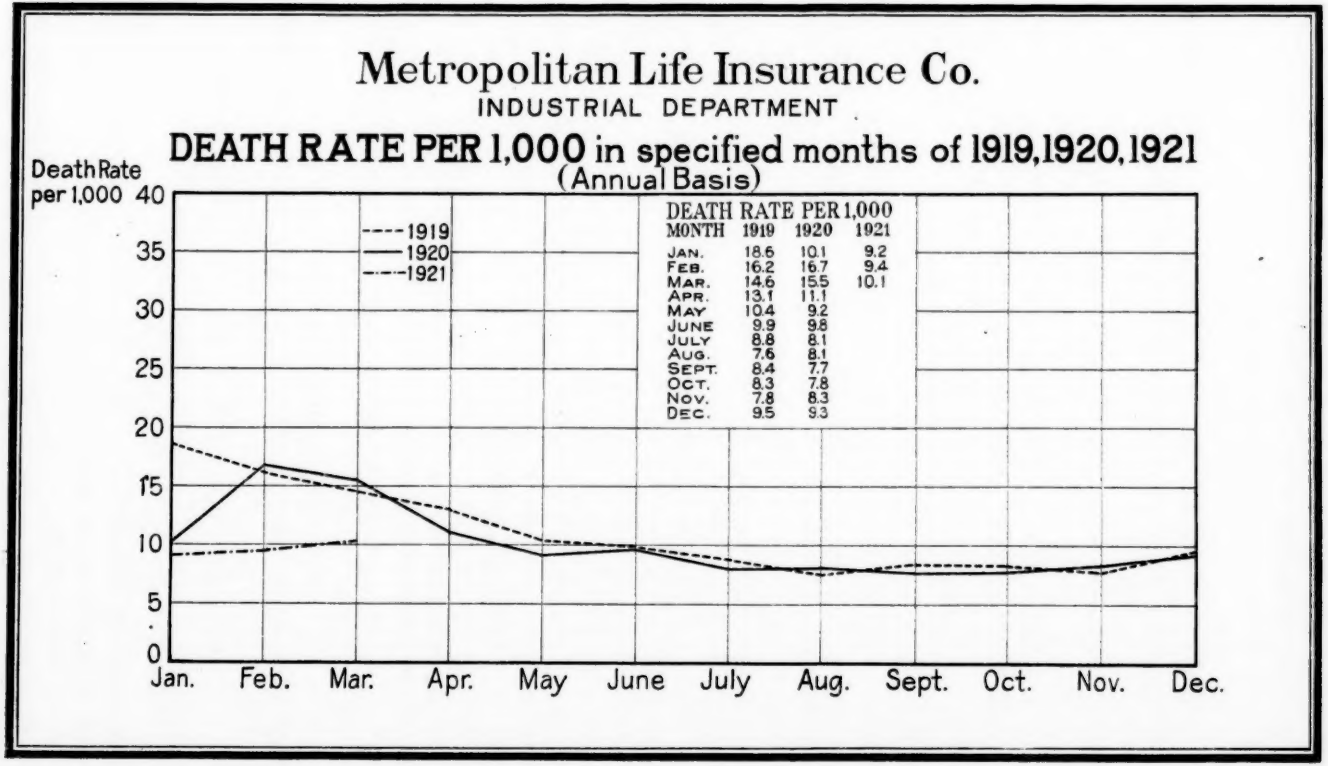
Metropolitan Life Insurance Co.
INDUSTRIAL DEPARTMENT
DEATH RATE PER 1,000 in specified months of 1919,1920,1921
(Annual Basis)
Death Rate per 1,000
40
35
30
25
20
15
10
5
0
1919
1920
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DEATH RATE PER 1,000
MONTH 1919 1920 1921
JAN. 18.6 10.1 9.2
FEB. 16.2 16.7 9.4
MAR. 14.6 15.5 10.1
APR. 13.1 11.1
MAY 10.4 9.2
JUNE 9.9 9.8
JULY 8.8 8.1
AUG. 7.6 8.1
SEPT. 8.4 7.7
OCT. 8.3 7.8
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